

NON-PUBLIC?: N
ACCESSION #: 9004200670

LICENSEE EVENT REPORT (LER)

FACILITY NAME: South Texas, Unit 1 PAGE: 1 OF 3

DOCKET NUMBER: 05000498

TITLE: Reactor Trip Due to a Failed Relay in the Generator Breaker
Control Circuit
EVENT DATE: 07/04/89 LER #: 89-015-01 REPORT DATE: 04/05/90

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Charles Ayala - Supervising TELEPHONE: (512) 972-8628
Licensing Engineer

COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT:

On July 4, 1989, Unit 1 was in Mode 1 at 100 percent power. At 1915 hours, the Main Generator output circuit breaker opened. The main turbine governor valves closed to limit turbine overspeed and a reactor trip subsequently occurred on overtemperature-delta temperature. The plant safety systems responded as designed and no unexpected post-trip transients occurred. The cause of this event was the failure of a 125 VDC rated auxiliary relay which was erroneously used in the 250 VDC generator circuit breaker trip circuit. It has been determined that the incorrect relay was supplied to HL&P by the vendor. An error was made in transposing the HL&P purchase order requirements to the vendor's purchase order with the relay sub-supplier. Since the vendor tagged the relays correctly, the error was not detected during receiving verification. The failed relay and one other 125 VDC relay have been replaced with the

correct model. 250 VDC control circuits in Unit 2 have been inspected for similar relays which are not of the correct rating. No others were found.

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END OF ABSTRACT

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DESCRIPTION OF EVENT:

On July 4, 1989, Unit 1 was in Mode 1 at 100 percent power. At 1915 hours, the Main Generator output circuit breaker opened. The turbine overspeed protection closed the four governor valves which caused a rapid increase in steam pressure, Tave and pressurizer pressure. As a result of the pressurizer pressure increase, a pressurizer power operated relief valve (PORV) opened for approximately three seconds. The reactor subsequently tripped on overtemperature-delta temperature. All four steam generator PORV's opened and an auxiliary feedwater system actuation occurred on low steam generator level. Feedwater isolation occurred on reactor trip with low Tave signal. Control room operators responded in accordance with emergency operating procedures and restored the plant to normal operating pressure and temperature. The plant safety systems responded as designed throughout this event and no unexpected post-trip transients occurred. The NRC was notified at 2042 hours.

It was discovered that an auxiliary relay in the generator breaker trip circuit had shorted. This relay is in series with the breaker trip coils and is used to provide control room indication of breaker status, control power availability and continuity through the trip coils. A low current is continuously circulated through the trip circuit which is high enough to pick up the relay but not high enough to trip the breaker. The trip circuit operates at 250 VDC, however, the relay was rated for 125 VDC. Over time, the undersized relay deteriorated and shorted. The short resulted in a current increase sufficient to actuate the trip coils. Another identical relay in the same circuit was also determined to be rated incorrectly.

An investigation of documentation associated with prior maintenance and construction activities on the generator breaker was performed to determine the source of the 125 VDC rated relays in the 250 VDC circuit. The relays were properly specified and procurement documents issued for 250 VDC models as part of a modification to the generator breaker which was installed prior to receipt of the Operating License. However, the relays were incorrectly specified in the vendor's purchase order to the

sub-supplier as 125 VDC models. This resulted in the purchase of the wrong relays by the vendor which were subsequently shipped to HL&P. The relays were enclosed in cases which prevented viewing the nameplates unless the covers were removed. Since the vendor had applied the proper relay location identification number required by the HL&P purchase order, the relays were accepted through receiving verification. The relays were installed and scheme checked by startup; however, the model number of the relays was not indicated on the design drawing used for the scheme check.

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CAUSE OF EVENT:

The cause of this event was failure of the General Electric Model HGA11J52 125 VDC relay in the 250 VDC generator breaker trip circuit. The incorrect relay was supplied by the vendor due to a mistake in transposing the HL&P purchase requirements to the vendor's purchase order to the sub-supplier.

ANALYSIS OF EVENT:

Reactor trip and Engineered Safety Features actuation is reportable pursuant to 10CFR50.73(a)(2)(iv). The reactor was brought to an orderly shutdown with no unexpected post trip transients. The ESF systems functioned as designed. There were no adverse safety or radiological consequences as a result of this event.

CORRECTIVE ACTION:

The following corrective actions have been taken as a result of this event:

1. The 125 VDC relays in the generator breaker trip circuits have been replaced with the correct 250 VDC models.
2. Control voltage of 250 VDC is uniquely used in the generator breaker control circuit. The relays in the Unit 2 generator breaker circuits have been checked to ensure that they are properly rated.

ADDITIONAL INFORMATION:

There have been no previous LER's submitted regarding reactor trips caused by installation of incorrect components.

The shorted relay was a General Electric Model HGA11J52 supplied by the Magnetics Division of Spang Power Control. Note that this relay failed because the model supplied was the wrong voltage rating.

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ATTACHMENT 1 TO 9004200670 PAGE 1 OF 2

The Light Company
Houston Lighting & Power

South Texas Project Electric Generating Station
P. O. Box 289 Wadsworth, Texas 77483

April 5, 1990
ST-HL-AE-3426
File No.: G26
10CFR50.73

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

South Texas Project Electric Generating Station
Unit 1
Docket No. STN 50-498
Revision 1 to Licensee Event Report 89-015 Regarding
a Reactor Trip Due to a Failed Relay
in the Generator Breaker Control Circuit

Pursuant to 10CFR50.73, Houston Lighting & Power (HL&P) submits the attached revision 1 to Licensee Event Report 89-015 regarding a reactor trip due to a failed relay in the generator breaker control circuit. This revision includes additional information relative to the source of the failed relay. This event did not have any adverse impact on the health and safety of the public.

If you should have any questions on this matter, please contact Mr. C. A. Ayala at (512) 972-8628.

G. E. Vaughn
Vice President
Nuclear Operations

GEV/BEM/nl

Attachment: South Texas, Unit 1
LER 89-015 Revision 1

NL.LER89015.U1

A Subsidiary of Houston Industries Incorporated

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Houston Lighting & Power Company ST-HL-AE-3426
South Texas Project Electric Generating Station File No.: G26
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Revised 12/15/89

L4/NRC/

*** END OF DOCUMENT ***
